The Effect of Location of Study and Region of Birth on Immigrants' Wages

by Amani Anam

(6873181)

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Supervisor: Professor Gilles Grenier

ECO 6999

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Abstract

This paper uses the 2006 Canadian Census and the 2011 National Household Survey to examine the impact of location of study, place of birth, and the assimilation rate on immigrants' earnings in the Canadian labour market, while taking year and geographic fixed effects into account. The paper finds that immigrants who studied outside of Canada, the U.S., or Europe incur a significant negative wage impact of approximately 10% on average. Specifically, the negative impact is 7% for men and 15% for women. With respect to place of birth, immigrants face negative entry effects, even if they were born in other Western countries. The largest negative premiums were present for immigrants from Asia. In some regions, women have a smaller disadvantage with respect to their place of birth; however, in many Asian countries, there is a considerable difference between earnings for women and men. Furthermore, when the effect of immigrants' Canadian work experience and foreign work experience are examined separately, foreign work experience is shown to have a very small return.

1 Introduction

Canada has been a country of immigrants since the first settlers arrived in the 1600s. Immigrants have accounted for a large proportion of the population increase during most of Canadian history, and especially during the period that followed World War II, when immigration contributed greatly to reducing shortages in the labour market (Bloom, Grenier and Gunderson, 1995). Over recent decades however, immigrants saw higher gaps in their initial earnings after arriving in Canada. These wage gaps are experienced primarily by individuals from certain countries, such as those from Asia. Often, we see that these immigrants are highly skilled and have valuable work experience; however, the effects of the location where they received their education and where they are born are highly significant. This is not a mere coincidence.

Through the point system, Canada accepts immigrants based supposedly on their merit[1], so it is reasonable to expect that they will assimilate quickly to match the earnings of Canadian-born citizens. However, there is still a wage gap for immigrants in Canada, after controlling for education and work experience. Canadian society accepts that immigrants will not immediately assimilate to the wages of Canadian-born citizens, especially if they are from non-English or non-French speaking countries. Furthermore, the aging of the Canadian population is heavily influenced by the Baby Boomer cohort, creating an upward pressure on average age. This might generate future labour supply shortages in many fields which can be supplemented through increased immigration.

In this paper, I examine wage assimilation for men and women in Canada by pooling cross-sectional data from two different data sets. I focus on immigrants in Canada who are highly

[1] Canada's immigration policy is based on a "point system" in which individuals who have skills that match what the Canadian labour market is facing a shortage of are preferred.

educated, comparing them to individuals who received degrees[2] in Canada, the U.S. and Europe. Education substantially influences an individual's economic performance, but education systems and qualities differ across countries. Furthermore, the Canadian labour market implicitly assigns varying returns to education from different countries such that there is a wage gap between immigrants and Canadian-born citizens that nonetheless hold the same level of education. In fact, many immigrants attain their educational degrees in the countries where they were born, if they did not study in Canada.

The main estimator of assimilation is calculated by looking at the effect of the variable of years since migration on wages. Immigrants accumulate human capital over time in their new host country in many forms other than strictly through formal education channels, such as learning about the host country's labour market institutions and official languages. This type of human capital can be measured using the immigrants' years since migration as a proxy (Grenier and Zhang, 2016). While all immigrants are expected to receive lower wages relative to Canadian-born citizens when they first enter the labour force in Canada, it has been observed that immigrants from Asia have much lower entry wages than immigrants from many European countries (Fortin, Lemieux and Torres, 2016).

This paper finds that the Canadian labour market significantly remunerates Canadian-born citizens relative to immigrants, as well as immigrants who were educated in Western countries as relative to those who were educated elsewhere, as was shown in the existing literature. Location of study and place of birth have statistically and economically significant impacts on wages. Individuals born outside of Canada, the U.S., or Europe will be initially worse off in terms of wages. The gap is around the same for men and women. Interestingly, the effect of having attained their highest education degree, all other factors held constant, outside of

[2] Individuals with an educational level above a high school diploma.

Canada, the U.S. or Europe is doubly worse for women, at -15%, as opposed to -7% for men. Additionally, years since migration positively affects immigrants' wages at a marginally decreasing rate. As immigrants catch up[3] to Canadian-born citizens, demographic factors including gender, marital status, educational attainment level, and geographic location significantly affect their assimilation.

The remainder of this paper is as follows. Section 2 consists of a literature review, first of the studies related to wage assimilation of immigrants relative to natives, and then of studies about the effect of immigrants' region of birth and location of study on their earnings. Section 3 describes the Canadian Census and National Household Survey, as well as the restrictions imposed to generate my sample of interest, the variables, and the summary statistics. Section 4 presents the econometric model used and explains what each variable represents. Section 5 displays the empirical results of this study and whether my findings are expected and reasonable. Section 6 includes three robustness checks that I have implemented. Section 7 concludes this paper with my main findings.

2 Literature Review

Education is an essential determinant of wages and employment for both immigrants and Canadian-born workers. For immigrants, the location of where this education was obtained is crucial, as is the location of birth. The Canadian labour market assigns wage levels that are influenced by where an individual's education was obtained - whether it is justified or not. In this section, I will provide a review of the existing literature on the wage gap and assimilation rate for

[3] The time to "catch up" is the number of years until immigrants' wages will assimilate to Canadian-born citizens' wages.

immigrants and native-born citizens, and then of studies that have considered the impact of location of study and place of birth.

2.1 The Relative Earnings of Immigrants

Chiswick (1978) is the first prominent study on this topic that investigated the earnings-differential between foreign-born adult white men with the comparative native-born population in the U.S. The purpose was to examine the effect of foreign birth, foreign schooling, and post-school training. Using the U.S. 1970 Census of the Population, the sample was restricted to white men of 25 years to 64 years living in the 50 U.S. states and Washington D.C. in 1969, who worked a minimum of 1 week in the year and reported earnings. Chiswick used a typical model for immigrant wage assimilation including a quadratic term for years since migration. He observed that the initial earnings for the foreign-born were significantly lower than those of their native-born counterparts, all other factors held constant. The longer the time after an immigrant had arrived, the better the immigrant would fare; however, this assimilation process applied at a decreasing rate. The foreign-born white man in the U.S. earned 1% less than their native-born counterpart on average, but holding years since migration and demographic variables, like schooling and experience, constant the foreign-born would earn 3% more. This article found that immigrants rapidly caught up to the native-born population's earnings, equaling them after 10 to 15 years.

Borjas (1985) used the 1970 and 1980 U.S. Censuses to follow up on Chiswick's conclusion that immigrants' earnings increased rapidly by examining different immigrant cohorts. The sample was restricted to men 18 years to 54 years in 1970 and men 28 years to 64 years in 1980 who had positive earnings. This study separated Mexican, other Hispanic, Asian, white, and black immigrants into 18 cohorts. It was found that when the cohort analysis was

conducted, as opposed to the simpler cross-section analysis, the "quality" of immigrants had declined, which contributed to the overestimation of the assimilation rate in the cross-section analysis. The paper suggested that the assimilation rate for immigrant cohorts was slow so that immigrants' earnings exceeding those of the native-born citizens would occur much later than what was shown in a cross-sectional estimate.

Baker and Benjamin (1994) did a similar study on the economic assimilation of immigrants in Canada using census data for 1971, 1981, and 1986. The sample was restricted to male individuals 16 to 64 years' old who worked at least 40 weeks and reported positive earnings in the year prior to the census. The paper aimed to present the picture of economic assimilation for immigrants while taking cohort effects into account. The authors used a standard earnings function with the addition of cohort-specific variables. They assumed that the unobservable cohort-specific effects in the error term would take such a form that the error term would be the summation of a time-dependent cohort effect, unobserved time effects across different cohorts, and a cohort-specific fixed effect. Specifically, they assumed that the cohort-specific fixed effects will be fixed over time, and that the expected value of the unobservable time-specific effects over time will be zero. It is suggested that if the model is free of the fixed effects bias, one can identify the assimilation rate. They concluded that immigrant entry earnings are smaller with each successive cohort and that by using just one census, as opposed to many censuses, the measures of assimilation were over-estimated.

Also using pooled data from the 1971, 1981, and 1986 Canadian Censuses, Bloom, Grenier and Gunderson (1995) compared the wages and assimilation rates of immigrants at their time of arrival to the wages of Canadian-born individuals. They used pooled data in order to measure the cohort effect for immigrants independently from the years since migration effect.

They restricted their sample to individuals aged 25 years to 64 years. They used a typical model for immigrant wage assimilation; however, they used years since migration as a linear term instead of as a quadratic term, since they found that their results were similar regardless of it being a linear or quadratic term. They found that later cohorts of immigrants were having more difficulty in their economic assimilation than earlier cohorts. They attributed that finding to changes in immigration policy over time, a prolonged recession, and possibly labour market discrimination.

In a more recent analysis covering a longer period, Aydemir and Skuterud (2005) examined the entry earnings of cohorts of immigrant men and women in Canada from 1966 to 2000 using census data from 1981 to 2001. The study restricted its sample population to immigrants and natives between the ages of 18 and 54 who were full-year, full-time workers. Additionally, they only included individuals who had entered the labour market between 1965 and 1999. The authors used a human capital model building off the work of Chiswick (1978). The base specification was the common Mincerian human capital model with the addition of a number of essential variables interacted with an immigration binary variable. By creating this many interaction terms, the goal was to calculate a more precise explanation of the effect of years since migration and the cohort effect for immigrants. However, an issue that the authors have acknowledged by doing this is that it was difficult to interpret the years since migration profiles as the model did not distinguish between the Canadian labour market experience for immigrants from that of Canadian-born citizens. They dealt with this by creating further specifications that added more interaction terms. They found that there has been a decline over these successive cohorts, and that there was a negative return to foreign labour market

experience for men from non-traditional source countries, but not a negative return to foreign education.

Frenette and Morissette (2005) used the 1981, 1986, 1991, 1996, and 2001 Canadian Censuses data to examine the determinants that lead recent immigrants towards assimilation with the comparable Canadian-born population. The sample was restricted to full-time, full-year individuals aged 16 to 64 years who had positive earnings. The study followed the framework proposed by Grant (1999) and Baker and Benjamin (1994) to identify the immigrant entry effect, cohort effects, and an interaction variable of those terms. The paper found that the initial entry gap between immigrants and the Canadian-born had increased over time. Furthermore, recent immigrants would have had to have a rapid increase in their age-earnings profile to catch up to the comparable Canadian-born citizens, because their assimilation growth did not completely offset the significant negative entry effect. Additionally, the socioeconomic characteristics of immigrants did not explain the decline in the immigrant entry effect. The immigrant entry effect was impacted more by the return to socioeconomic characteristics.

The literature surveyed above focused mainly on immigrants' assimilation rates and cohort effects. Many articles within this area discussed other issues such as the effects of gender and geographic residence (e.g. Quebec vs. the rest of Canada). Adserà and Ferrer (2014) considered specifically Canadian immigrant women and the relationship with being secondary workers[4] and their wages. Using the 1991, 1996, 2001, and 2006 confidential files of the Canadian Censuses and the O*NET information on the skill requirements of jobs, the study examined the behaviour of Canadian immigrant women in terms of labour force participation and wages. The sample was restricted to women 18 to 64 years who were married or common-law and immigrated to Canada after 17 years of age, provided that they were immigrants. This

[4] Secondary workers are defined as the lower-wage earners in a household.

study found that immigrant women were relatively older and had higher educational levels than natives. Canadian-born women had a higher labour force participation rate relative to immigrant women; however, this gap diminished over time. In fact, excluding low-wage immigrant women, immigrant women defied the expectation of secondary workers' behaviour and instead were converging to the profiles of immigrant men.

Using the 1999 Workplace and Employee Survey (WES) data, Wald and Fang (2008) studied the question of how earnings are affected by overeducation[5] among recent immigrants in the Canadian labour market. The sample of interest was restricted to paid workers aged 18 to 64 years. Recent immigrants were considered to be those who arrived between 1989 and 1997. The educational attainment level that workers believed was necessary for either a job's entry or performance requirement and their actual level were compared to each other. The authors found that recent immigrants were more likely to be over-educated when compared to the Canadian-born worker; specifically, half of the immigrants in the study were overeducated. Furthermore, this mismatch in credentials was associated with lower earnings. The authors suggested that because the returns to years of over-education offset the usual positive effect of extra years of schooling, relative to Canadian-born workers, finding an appropriate job-match was relatively more important for immigrants.

Nadeau and Seckin (2010) considered the immigrant wage gap from 1980 to 2000 separately in Quebec and the rest of Canada. Using Canadian Census data, the sample was restricted to men aged 20 to 64 years who were not self-employed, worked at least 20 hours per week, and at least 26 weeks per year. The Oaxaca-Blinder decomposition was used to separate the explained and unexplained parts of the immigrant wage gap. They found that the relative

[5] "Overeducation describes the extent to which an individual possesses a level of education in excess of that which is required for their particular job" (McGuinness, 2006).

labour market performance was worse in Quebec than in the rest of Canada, all other factors held constant. While immigrants in the rest of Canada received relatively higher wages than Canadian-born citizens in 1980, this pattern reversed in 2000. It was suggested that this was because foreign experience was less valued and that there was a drop in the unexplained portion of the wage gap. Additionally, knowledge of French, an official Canadian language, had a positive effect on shrinking the immigrant wage gap, and the authors suggested that the Quebec government should put greater emphasis on French in its immigration policy.

Using the 1986, 1991, and 1996 Canadian Censuses, Schaafsma and Sweetman (2001) examined the effect of age at immigration on earnings in Canada to investigate the return to work experience, the return to education, and the acculturation effect. This study restricted the sample to men aged 16 to 64 years that worked at least 40 weeks annually. The focus was on age at immigration, not the assimilation profile, so each census year was treated as a cross-section – rather than a pooled data set. To address the identification problem due to the multicollinearity of including age, age at immigration, and year of immigration in an equation, they first estimated the Canadian-born citizens' earnings profiles at all ages – thus abstracting from age at immigration and year of immigration effects. Then, using the regression results from immigrant sample, they estimated a regression of the difference between the immigrants' earnings and the Canadian-born citizens' earnings on cohort controls and age at immigration. Unsurprisingly, they found that arriving to Canada later translated to lower returns to foreign labour market experience and foreign education. Visible minorities who arrived before their teen years did not see a critical impact on their earnings relative to the comparable Canadian-born.

2.2 The Impact of Location of Study and Place of Birth

Many studies on immigrant wage assimilation acknowledge the importance of the place where an individual studied and their birthplace. Immigrants born in and educated in Western countries are expected to have a smaller earnings disadvantage than immigrants born in and educated in other regions relative to the Canadian-born.

Using the U.S. 1970, 1980, and 1990 censuses and the National Longitudinal Survey of Youth, Bratsberg and Ragan (2002) studied the effect on immigrants' earnings of having studied in the U.S. as opposed to having studied elsewhere. The sample was restricted to foreign-born men aged 25 years to 64 years who earned at least $1000 and worked a positive number of hours in 1989. The study suggested that the main reason for wage differentials between immigrants and the native-born was educational attainment. The article found that immigrants who studied in the U.S. earned more than immigrants who studied elsewhere, not only because of a higher level of schooling, but also because of a higher return to their schooling. Furthermore, the return to foreign schooling was dependent on whether an individual had any U.S. schooling. For example, the return to foreign education would be higher for an immigrant who completed high school in the U.S. than for one who never studied in the U.S. As expected, immigrants from developed countries where English is an official language have a higher return to foreign education relative to developed countries where English is not an official language; however, the return to U.S. education would be higher for immigrants from the least developed countries relative to other developed countries.

Coulombe, Grenier and Nadeau (2014) used the 2006 Canadian Census to analyze the factors that explain the immigrant wage gap in Canada. The major contribution was to integrate the GDP per capita, as a proxy, into the Mincerian regression framework to encompass the

quality of schooling and work experience of the foreign country. The sample was restricted to individuals who worked full-time, full-year, attained their highest educational degree in either Canada or their birth country, and were aged 18 to 64 years, but who were not self-employed. The study first showed GDP per capita to be a suitable cross-country proxy, and then estimated the wage regression. Following this, an alternative form of the Blinder-Oaxaca method was used to separate the explained and unexplained portions of the immigrant wage gap. The study found that lower human capital quality explained the largest proportion of the wage gap and completely offset the returns to schooling and experience received by immigrants. The authors found that increasing GDP per capita significantly led to higher returns to education and experience in an immigrant's home country.

Ferrer and Riddell (2008) investigated the return to human capital for immigrants relative to the native-born in Canada in order to analyze sheepskin effects using the 1981, 1986, 1991, 1996, and 2001 Canadian Censuses. Sheepskin effects are "the gain in earnings associated with receipt of a degree, controlling for years of schooling." Building on Ferrer and Riddell (2002), this paper incorporated the dimension of analyzing immigrants' returns to human capital while considering sheepskin effects. Both years of schooling and educational degrees were explanatory variables in their econometric model. The sample was restricted to full-time, full-year workers aged 16 years to 64 years. This study concluded that immigrants' years of foreign schooling and experience had lower returns than the comparable returns to schooling and experience of the Canadian-born. However, this devaluation of immigrants' human capital did not apply to diplomas and degrees. Moreover, foreign credentials earned returns that were at least as high as the return for Canadian-born citizens' degrees and diplomas, especially if they were from non-Western countries or had a postgraduate degree. This finding is consistent with signaling models,

where there are major sheepskin effects if there is a relatively high cost to signal higher productivity. This finding could also be interpreted to support human capital theory as, in foreign countries with large variations in school quality, the difference in the skills of an individual with a higher-level degree and an individual with a lower-level degree may be larger for a foreign-worker than for a Canadian-born worker.

Chiswick and Miller (2009) used the 2000 U.S. Census to examine how well immigrants' educational attainments matched their occupation relative to native-born citizens. The article looked at men in the U.S. aged 25 years to 64 years in 1999 who were not enrolled in school. The paper used the Realized Matches procedure for measurement where the actual educational attainments of workers were used for the job as opposed to "objective" evaluations of the requirements or worker self-reported requirements for the job. The paper found that recent cohorts were overeducated relative to their occupation, while the opposite was true for older cohorts. They found that the transferability of jobs internationally declined as an individual had more experience abroad. Interestingly, the longer immigrants had been in the U.S., the less likely they were to be overeducated. Furthermore, immigrants with language mismatches had less transferability. Interestingly, immigrants from the former Soviet Union were the most overeducated given their occupations, and immigrants from Mexico were the most undereducated.

Li and Sweetman (2014) used the 1986, 1991, 1996, and 2001 Canadian Censuses to examine the relationship between an immigrant's country of education and their outcomes in Canada with respect to their return to education and return to experience. Quality was measured using Hanushek and Kimko (2000)'s index of educational quality, for which international test scores were used as a proxy for the quality of source country educational outcomes. Their sample

was restricted to immigrants born after 1944, who were at least 25 years old and not in school. They used two dimensions for education to separate the quantity of education using years of schooling or the highest degree, and the quality of education, using test scores. They found that the quality of education in the country of study for immigrants was positively correlated with their returns to education in Canada. Furthermore, the quality of education from a foreign country was insignificant for immigrants who arrived in Canada while they were still young and obtained their education in Canada.

Fortin, Lemieux and Torres (2016) used the 2006 Canadian census that included a question on the location of study for immigrants. They controlled for whether the source country of human capital was Canada or a foreign country to examine its impact on wages. They restricted their sample to individuals 20 years to 64 years who had an education level above high school and were full-time workers that earned a positive wage income in 2005. They further limited immigrants to those who arrived in Canada between 15 years and 29 years of age. The study found that location of study explained an important proportion of the immigrant wage gap. The results of the study suggested that returns to foreign education were overestimated in previous studies, and that there was a large wage penalty for having studied in Asian countries, and a small positive premium for having studied in the U.K. Furthermore, the wage penalties differed across fields of studies with science, technology, engineering and mathematics fields having large wage penalties, suggesting that these may not be transferable internationally.

The existing literature reflects that the labour market performance of foreign-educated working immigrants in Canada has worsened over time compared to that of Canadian-born citizens who are Canadian-educated. Immigrants from countries that are similar to Canada in terms of culture and language have smaller wage penalties relative to natives. These studies

ranged from examining cohort effects to conducting cross-sectional analyses of how place of birth and other factors explained wage gaps for immigrants. In the following sections of this paper, I will examine the effects of immigrants' location of study and region of birth on their weekly wages relative to Canadian-born citizens using pooled data. Thus, this study will have a large sample of data available for analysis.

3 Data and Variables

3.1 Sample of Interest

This study uses data drawn from the Public Use Micro-Data files (PUMF) of the 2006 Canadian Census and from the 2011 National Household Survey (NHS). Those two data sets contain information on various aspects of Canadians' lives. The demographic, social, and economic elements of respondents are the focus of this paper in determining the effect of the source of education and the place of birth of different cohorts on immigrants' wages.

The Canadian Census of Population is conducted nationally every five years. The Census includes a mandatory long-form questionnaire with the exception of 2011. The 2006 PUMF provides a picture of the Canadian population, and is considered to be a statistical examination of the population with the aim to provide an overview of peoples' demographic, social, and economic characteristics, such as age, sex, income, and migratory activity. The unit of observations is the individual. The public use sample consists of cross-sectional data containing 844,476 observations. The response rate was an expected 93.5%, similar to the response rate of other Canadian censuses, as they are mandatory. It was a random cluster sample of 2.5 million dwellings (Statistics Canada, 2010). The survey is weighted and follows the restrictions of excluding people living in institutions, Canadian citizens living outside of Canada, full-time

members of the Canadian Forces stationed outside Canada, and foreign residents visiting Canada (Statistics Canada, 2006).

The NHS is a voluntary national survey conducted for a single year, 2011, in Canada that focused on the same topics as the census long-form questionnaire. Although certain sections and questions from the long-form census have been changed, the NHS is largely consistent in its questions with respect to the long-form census. The NHS was distributed randomly to 33% of households in Canada. The public use cross-sectional data set contains 887,012 observations. The response rate was approximately 68.6% - this is as expected because it is similar to the response rates of Statistics Canada's other voluntary surveys. As the NHS is a voluntary survey, there may be a non-response bias if parts of the population are more likely to complete the survey than others. The distribution of respondents in the NHS is different from that of previous censuses (Nield and Nordstrom, 2016). However, a complex approach to the sampling design was used to combat issues of non-response and this data is suitable for my particular needs (Statistics Canada, 2015).

The main focus of my econometric model is the financial impact of an immigrant's region of study and place of birth. Both the 2011 NHS and 2006 Census surveys ask about years since migration by first asking whether the respondent is a landed immigrant. Following this, if they have answered positively, they are asked a series of related questions including about their location of study. Only the 2006 Census and 2011 NHS have asked that question, which is why I am using these two data sets.

The sample of interest is restricted to male and female individuals who have education above a high school level, are aged 20 to 64 years, earn above $500 and less than $250,000 annually, and are full-time, full-year workers. Respondents are excluded if they are non-

permanent residents, arrived in 2005 or 2006 (from the 2006 Census), arrived in 2010 or 2011 (from the 2011 NHS), did not report their year of arrival, and are immigrants who arrived before 1965. While self-employed workers are included in the sample, unpaid workers and workers who did not provide their class of worker are excluded. Canadians who studied outside of Canada are also excluded.

Respondents that do not have an education level above secondary (high school) are excluded from the study because there is no information on the region of study variable. Only individuals aged 20 to 64 years are included, because most individuals have not concluded a post-secondary education degree, diploma, or certificate before age 20. I did not include individuals older than the age 64, since I want the sample to be representative and to abstract from the issue of retirement as many individuals above the age 64 do not participate in the labour force. The effect of location of education and returns to years of education on the wage would not be properly measured otherwise. Focus was placed on the two groups: all immigrants in Canada and Canadian-born citizens. I have only included individuals whose labour force status is employed, because only they will report current weekly wages. Only immigrants who arrived after 1964 are included in the population of interest. Additionally, only full-time, full-year[6] workers are included based on the assumption that their main activity is working. Canadian-born people that studied outside of Canada, the U.S., or Europe are also excluded. The sample size is 271,096 in total, comprised of 127,536 female and 143,560 male observations, as well as 51,218 immigrants and 219,878 non-immigrants.

The region of study information in the dataset is ascertained only for individuals who are at least 15 years of age and have at least a post-secondary certificate, diploma, or degree. The data for locations of study in the public use data are categorized in broad groups that are more

[6] Full-year workers are defined as individuals that work at least 49 weeks in a year.

aggregated than the desired specificity of this study. As such, location of study is represented as either within Canada, the U.S., or Europe or outside of that group of countries. I make the assumption that individuals who did not study in Canada studied in the same region as the one where they were born, such that an individual's place of birth is examined using specific regions in this paper (because the public use data is used). Additionally, in the public-use data, the information regarding place of birth is more detailed than the information regarding the location of study. On the other hand, the confidential data would provide precise information on both of these variables. Table 1 supports this assumption as only approximately 5% of immigrants who do not study in Canada received their highest degree outside of their region of birth.

Table 1: Number of Observations of Location of Study of Canadian Immigrants

	Immigrants		
	Men	Women	Both
Location of Study and Place of Birth are the Same	12,460	9,882	22,342
Study of Location is in Canada	13,780	12,471	26,251
Residual	1,730	895	2,625
Entire Sample	27,970	23,248	51,218

Note: The considered regions for location of study are Canada; the U.S.; Europe; other countries in North, South, and Central America; Eastern Asia; Southeastern and Southern Asia; and Oceania and Other Countries.

My model measures the log of weekly wages. I use the 2006 CPI level to deflate wages to show changes in real values. I used weeks worked as the unit of measure, which was counted for 2005 in the 2006 Census and for 2010 in the 2011 NHS. I have excluded individuals that do not earn any wages in the year, since they do not contribute to explaining the wage gap. Furthermore, I have excluded individuals that earn less than $500 and more than $250,000 in

annual income because they are outliers.

3.2 Variables

This paper focuses on how immigrants' location of study and place of birth influence the earnings of immigrants relative to Canadian-born citizens. I have generated and compiled variables that are suitable for the purposes of this paper as well as to provide precise estimates given the limitations of the data.

The dependent variable is the *log of weekly wages*. This study includes human capital, immigration, demographic, and geographic independent variables for the analysis. The human capital variables are *work experience* and *years of schooling*. For *work experience* I used Mincer's potential experience definition as being measured by age subtracted by an individual's education and then by 6 years. This is an approximate measurement as it assumes that an individual's entire work experience is continuous without gaps. Education is reported as an individual's highest degree, diploma, or certificate in the microdata. I used the approximation contained in Grenier and Nadeau (2011) for generating the years of education variable. Each specification of educational achievement is assigned a standard number of years of education, which is then applied to each respondent. As I previously mentioned, I have only included individuals with an education level above high school. There is also an interaction of the variables of *immigrant status* and *work experience*.

The immigration variables include *immigration status*, *years since migration*, a set of dummy variables for *place of birth* and for having *studied outside of Canada, the U.S., or Europe*. *Immigration status* is coded as to either an immigrant or a Canadian-born citizen. I calculated the *years since migration* by subtracting the year that the survey occurred, 2010 for the 2011 NHS or 2005 for the 2006 Census, from the year they came to Canada. The data for this

is reported via two methods. In the 2011 NHS, for individuals that arrived after 1989, the data are directly recorded for each individual year. For respondents who arrived before 1990, the data are collapsed, and their response is recorded in five-year intervals. Similarly, in the 2006 Census, for individuals that arrived after 1979, the data are directly recorded for each individual year; however, individuals who arrived before 1980 have their responses collapsed into five-year intervals[7].

The *place of birth* variable is divided into the following groups: *Canada*; the *U.S. and Europe*; *Other Americas* – i.e. Central America, South America, Mexico, Jamaica, Other Caribbean and Bermuda; *India*; *China*; the *Philippines*; *Central Asia, South Asia, and the Middle East*; *Eastern Asia*; *Southeastern Asia*; the *African Countries*; and *Oceania and Other Countries*[8]. The *studied outside of Canada, the U.S., or Europe* variable is binary and is equal to 0 if the respondent received their latest post-secondary degree, diploma, or certificate in Canada, the U.S., or Europe, and equal to 1 otherwise. The assumption here is that the value of education obtained in Canada, the U.S., and Europe will have similar returns. Canadian-born citizens that studied outside of Canada, the U.S., or Europe were dropped.

There are demographic variables such as *marital status* which is equal to 1 if an individual is married or in a common-law relationship, and equal to 0 otherwise. As well, there is a *gender* variable which is equal to 1 if an individual is female and 0 if he is a male. There is a *visible minority* variable which is equal to 1 if an individual identifies himself or herself as a visible minority and 0 otherwise. Geographic variables are broken down into provinces and cities. There are six binary variables for provincial regions: *Ontario, Quebec, Alberta, British Columbia*, the *Atlantic* provinces, and the *prairies*. The Atlantic provinces include

[7] To integrate both these methods for both sets of data, I chose to look at the median years of the categories for the collapsed data.
[8] Refer to Table A1 in Appendix for the breakdown of countries in each group.

Newfoundland and Labrador, Prince Edward Island, New Brunswick, and Nova Scotia because, as presented in Table 2, they do not have a large number of immigrants. Similarly, Manitoba and Saskatchewan are grouped together to define the prairies; however, Alberta is considered individually due to its high number of immigrants. There are also three binary variables for the largest metropolitan areas of *Toronto*, *Vancouver*, and *Montreal*. The reference group consists of unmarried, Canadian citizens, living in Ontario who are not immigrants, with education levels above a high school degree and earning above $500 and less than $250,000 of the 2006 Canadian Census and 2011 National Household Survey.

Table 2: Probability of Residence for Immigrants and Canadian-Born Citizens in Canadian Provinces

	Immigrant	Canadian-Born Citizen	Whole Sample
British Columbia	15.9%	10.5%	11.5%
Alberta	9.0%	11.2%	10.8%
Saskatchewan	0.5%	3.2%	2.7%
Manitoba	1.8%	3.5%	3.2%
Prairies	**2.3%**	**6.7%**	**5.9%**
Ontario	59.3%	35.1%	39.7%
Quebec	12.9%	27.8%	25.1%
New Brunswick	0.1%	2.7%	2.3%
Prince Edward Island	0.0%	0.4%	0.4%
Nova Scotia	0.4%	3.6%	3.0%
Newfoundland and Labrador	0.03%	1.8%	1.5%
Atlantic	**0.5%**	**8.6%**	**7.1%**
Total Sample	51,218	219,878	271,096

Notes: Means are all weighted. Non-Immigrants do not include non-permanent residents.

3.3 Summary Statistics

Table 3 presents the weighted means and standard deviations (of the continuous variables) for immigrants and Canadian-born women and Table 4 does the same for men. There

are 23,248 observations for immigrant women and 104,288 for Canadian-born women. For immigrant women, the average weekly wages are $899; whereas, Canadian-born women earn $934.41 on average – a difference of $35.34. On average, immigrant women have been in Canada for 19 years. Approximately 43.4% of immigrant women studied outside of Canada, the U.S., or Europe. Furthermore, immigrant women have two more years of work experience than Canadian-born women. Immigrants have 15 and a half years of schooling – half a year more than non-immigrants. The average age of immigrant women is 43 years, and the average age of Canadian-born women is 41.

Table 3: Summary Statistics for the Sample of only Women

Variable	Mean for Immigrants	Mean for non-Immigrants
Weekly Wages	899.00 (17.66)	934.41 (524.8152)
Years Since Migration	19.44 (12.37)	
Studied Outside of Canada, the U.S., and Europe	0.434	
Place of Birth		
U.S. and Europe	0.300	
Other Countries in the American Continents	0.149	
India	0.082	
China	0.132	
Philippines	0.120	
Central Asia, Southern Asia, and the Middle East	0.081	
Eastern Asia	0.023	

Southeastern Asia	0.038	
Africa Countries	0.066	
Oceania and Other Countries	0.008	
Work Experience	21.5 (10.2801)	19.89 (10.8109)
Years of Schooling	15.40 (1.7677)	14.90 (1.5961)
Visible Minority	0.658	0.036
Marital Status	0.727	0.602
Provinces		
British Columbia	0.161	0.100
Alberta	0.084	0.103
Prairies	0.021	0.069
Quebec	0.123	0.282
Atlantic	0.006	0.091
CMAs		
Vancouver	0.143	0.049
Montreal	0.117	0.130
Year: 2010	0.554	0.522
Observations	23,248	104,288

Notes: Means and standard deviations are in brackets. The summary statistics are all weighted. Non-Immigrants do not include non-permanent residents.

Table 4: Summary Statistics for the Male Sample

Variable	Mean for Immigrants	Mean for non-Immigrants
Weekly Wages	1152.58 (654.028)	1194.32 (642.9919)
Years Since Migration	18.97 (12.7055)	
Studied Outside of Canada, the U.S., and Europe	0.467	
Place of Birth		
U.S. and Europe	0.312	
Other Countries in the American Continents	0.117	
India	0.095	
China	0.131	
Philippines	0.071	
Central Asia, Southern Asia, and the Middle East	0.116	
Eastern Asia	0.021	
Southeastern Asia	0.043	
African Countries	0.083	
Oceania and Other Countries	0.010	
Work Experience	22.00 (10.3241)	20.76 (10.7978)
Years of Schooling	15.60 (2.0546)	14.61 (1.6802)
Visible Minority	0.638	0.032
Marital Status	0.805	0.663
Provinces		

British Columbia	0.158	0.108
Alberta	0.096	0.121
Prairies	0.023	0.065
Quebec	0.135	0.275
Atlantic	0.006	0.082
CMAs		
Vancouver	0.139	0.052
Montreal	0.127	0.120
Year: 2010	0.539	0.506
Observations	27,970	115,590

Notes: Means and standard deviations are in brackets. The summary statistics are all weighted. Non-Immigrants do not include non-permanent residents.

The highest proportion for the region of birth for immigrant women and immigrant men is the U.S. and Europe at 30.0% and 31.2%, and the lowest proportion is Oceania and Other Countries with 0.8% and 1.0%, respectively. Other regions with a high frequency for women and men are the Other Americas (15% for women and 12% for men), China (13%), and the Philippines (12% for women) and Central Asia, Southern Asia, and the Middle East (12% for men). As expected, the proportion belonging to a visible minority of immigrant women, 66%, is much higher than that of Canadian-born women, 3.5%. The proportion of immigrant men belonging to a visible minority is 64%, which is 20 times greater than the rate of Canadian-born men, which is 3.2%.

There are 27,970 observations for immigrant men and 115,590 for Canadian-born men. Immigrant men and Canadian-born men on average earn weekly wages of $1,152.58 and

$1,194.32, respectively – a gap of $41.74. The weekly wage gap for immigrant men is larger than for women; however, immigrant men earn more than immigrant women and Canadian-born women on average by $253.51 and $218,17, respectively. Like immigrant women, immigrant men have been in Canada for an average of 19 years. Approximately 46.7% of immigrant men studied outside of Canada, the U.S., and Europe – a higher rate than for women. Like the women, Canadian-born men have 15 years of schooling on average with 20 years of experience. Immigrant men have one more year of schooling than Canadian-born men, 16 years, and 22 years of experience. The average age of immigrant men is 44, while it is 41 for Canadian-born men.

To conclude, the summary statistics presented demonstrate that men are older than women and earn higher weekly wages; however, immigrants are older than the Canadian-born citizens but earn less than Canadian-born citizens. Furthermore, immigrant men earn considerably more than all women, on average. Immigrants had slightly more schooling than non-immigrants, as well as relatively more work experience; however, immigrants still earn less. This paper will test whether the education received outside of Canada and other Western countries has value on the Canadian labour market. The majority of immigrants attained their most recent post-secondary degree, certificate, or diploma from Canada, the U.S., or Europe. The region where most immigrants are born is the U.S. and Europe, with China and other countries in the North America, South America, and Central America following.

4 Econometric Model

The econometric model I estimate is expressed as:

$$\log(WEEKLYWAGES) = \beta_0 + \beta_1 EXP_i + \beta_2 YearsofSchool_i + \beta_3 YEAR_i + X'\rho +$$

$$IMM_i\,(\alpha_1 YSM_i + \alpha_2 EXP_i + \alpha_3 SOCanUSEur_i + \sum_{j=2}^{k} \delta_j POB_j) + \varepsilon_i$$

where $\log(WEEKLYWAGES)$ is the log of the weekly wages of individual i. The variable IMM_i is a binary variable that indicates whether the respondent is an immigrant or a Canadian-born citizen.

The variable $SOCanUSEur_i$ is a dummy variable indicating whether a respondent studied outside of Canada, the U.S., or Europe – assuming that the return to schooling will not differ much between those three particular regions. POB_j is a set of dummy variables indicating the respondent's place of birth. The omitted group in my regression are those born in Canada. The entry effect, represented by the place of birth dummy variables, is the (expected) negative effect that being an immigrant has on wages relative to the reference group. Data were collected for two surveys with information for the years 2005 and 2010. Thus, I have included a dummy variable for the year 2010, labelled $YEAR_i$. Although the same cohorts are observed twice, cohort effects are not included. Each cohort is of 5-year periods so there may not be as much variability as there may have if the cohorts were of longer periods (e.g. 10-year periods or 15-year periods). It is assumed that the region of birth fixed effects can account for factors like ability and talent differences among the cohort groups.

The variable EXP_i is an explanatory variable that describes an individual's years of work experience. The 2006 Canadian Census and 2011 NHS do not record respondents' actual years of work experience, so I used the standard Mincerian potential experience definition, as detailed

in the data section above. The years of education variable, $YearsofSchool_i$, is a measure of an individuals' years of education.

The variable YSM_i is an explanatory variable that measures the number of years since migration of an immigrant. The interaction term $IMM_i * EXP_i$ allows for differences in the return to work experience between Canadian-born citizens and immigrants.

The vector of other regressors X' includes: a binary variable indicating an individual's marital status, a binary variable indicating gender, a binary variable indicating whether an individual is a member of a visible minority, provincial fixed effects, of which Ontario is omitted, and city fixed effects, of which Toronto is omitted.

I am using weights in my regressions since the surveys are not totally representative of the Canadian population. The 2006 Census is a mandatory survey, so it is expected to have less sampling bias than a voluntary survey; however, the 2011 NHS is a voluntary survey, so its sample will reflect a more distorted and biased representation of subsamples of the Canadian population than if it were mandatory. The weights are designed for possible biases.

The above model is essentially a human capital model with the addition of variables associated with immigration.

5 Results

Immigrants today are a less homogeneous group than a century ago, including economically and socially. Immigrants' home countries and locations of study are increasingly diverse. The first regression I will be estimating is for full-time, full-year working individuals that are either Canadian-born citizens or immigrants. This regression includes the total experience variable; whereas, the second set of regressions, as presented in Table 6, include

Canadian experience and foreign experience instead of total experience. This is an important distinction because the return to Canadian experience is expected to be higher than the return to foreign experience for immigrants. Thus, the return to experience for an immigrant who has worked in Canada can differ from the return they receive from working in a foreign country. Immigrants' returns to experience may be qualified in their home countries to earn the same level of income as Canadian-born citizens. However, they may earn less than the comparable returns to education of a Canadian-born citizen because their education was attained outside of Canada.

I present the results of three regressions in Table 5. Column (1) shows the estimates of a regression of $\log(WEEKLYWAGES)$ on years since migration, location of study, place of birth, work experience, years of schooling, and demographic characteristics for both genders. Column (2) shows the estimates of the same regression as column (1) for only the female population. Column (3) shows the estimates of the same regression as column (2) for only the male population.

Table 5: Regression Results for log(*WEEKLYWAGES*), with Immigrants' Canadian Work Experience and Foreign Work Experience constrained to have the same effect, OLS technique

	(1) Both genders	(2) Females	(3) Males
Immigrant*Years Since Migration	0.0095***	0.0094***	0.0094***
	(0.0003)	(0.0004)	(0.0004)
Immigrant*Studied Outside of Canada, the U.S., or Europe	-0.1089***	-0.1567***	-0.0742***
	(0.0072)	(0.0103)	(0.0101)
*Immigrant*Region of Birth*			
U.S. and Europe	-0.0954***	-0.1120***	-0.0733***
	(0.0094)	(0.0139)	(0.0128)
Other Countries in the American Continents	-0.1279***	-0.1293***	-0.1287***
	(0.0128)	(0.0179)	(0.0183)

India	-0.1826***	-0.2390***	-0.1228***
	(0.0142)	(0.0204)	(0.0196)
China	-0.1115***	-0.0933***	-0.1098***
	(0.0124)	(0.0173)	(0.0175)
Philippines	-0.1643***	-0.1481***	-0.1965***
	(0.0138)	(0.0191)	(0.0196)
Central Asia, Southern Asia, or the Middle East	-0.2104***	-0.2118***	-0.1823***
	(0.0135)	(0.0207)	(0.0181)
Eastern Asia	-0.1924***	-0.1912***	-0.1806***
	(0.0224)	(0.0303)	(0.0324)
Southeastern Asia	-0.1115***	-0.1172***	-0.0842***
	(0.0169)	(0.0259)	(0.0223)
African Countries	-0.1139***	-0.1143***	-0.0871***
	(0.0139)	(0.0213)	(0.0183)
Oceania and Other Countries	-0.0811*	-0.1029	-0.0640
	(0.0395)	(0.0436)	(0.0413)
Work Experience	0.0126***	0.0143***	0.0109***
	(0.0001)	(0.0002)	(0.0002)
Immigrant*Work Experience	-0.0082***	-0.0073***	-0.0090***
	(0.0003)	(0.0005)	(0.0005)
Years of Schooling	0.1072***	0.1360***	0.0852***
	(0.0008)	(0.0012)	(0.0010)
Visible Minority	-0.0700***	-0.0300***	-0.1038***
	(0.0067)	(0.0095)	(0.0093)
Marital Status	0.1360***	0.0572***	0.2220***
	(0.0026)	(0.0036)	(0.0038)
Gender	-0.2521***	-	-
	(0.0024)		
Provinces			
British Columbia	-0.1042***	-0.1242***	-0.0888***
	(0.0058)	(0.0091)	(0.0075)
Alberta	0.0811***	0.0351***	0.1153***
	(0.0043)	(0.0063)	(0.0057)
Prairies	-0.1056***	-0.0969***	-0.1099***
	(0.0052)	(0.0075)	(0.0071)
Quebec	-0.1787***	-0.1852***	-0.1674***
	(0.0037)	(0.0054)	(0.0051)
Atlantic	-0.1904***	-0.1868***	-0.1907***
	(0.0049)	(0.0065)	(0.0072)
CMAs			

Vancouver	0.0903***	0.1138***	0.0728***
	(0.0074)	(0.0113)	(0.0097)
Montreal	0.0664***	0.0788***	0.0539***
	(0.0045)	(0.0064)	(0.0061)
Year: 2010	0.0127***	0.0333***	-0.0082
	(0.0024)	(0.0034)	(0.0033)
Constant	5.0645***	4.386***	5.3755***
	(0.0112)	(0.0103)	(0.0153)
R-Squared	0.1929	0.1862	0.1561
Observations	271,096	127,536	143,560

Notes: Robust standard errors are in brackets. OLS regression results are weighted. The sample includes individuals 20 to 64 years with education levels above a high school degree and earn above $500 but less than $250,000 per year in the 2006 Canadian Census and the 2011 National Household Survey. The reference person is unmarried, Canadian-born citizens, living in Ontario in the Toronto CMA.
* significant at 10% level, ** significant at 5% level, *** significant at 1% level. All tests are two-tailed.

The coefficient of the years since migration is statistically significant and similar for all three samples. Immigrants' wages increase for each year in Canada at a rate of 0.95% for males and females and at a rate of 0.94% for both.

The region of birth fixed effects are the entry effects for immigrants from those regions. They are all negative and statistically significant for the equations of both genders, and they yield the expected results that immigrants from all parts of the World earn less than the Canadian-born at the time of their arrival. Immigrants from Central Asia, Southern Asia, and the Middle East earn the least compared to Canadian-born citizens, with a gap of 21.0%. Immigrants born in Oceania and Other Countries have the smallest wage penalty at approximately 8.1%. China, the U.S. and Europe, the Other Americas, African countries, and Southeastern Asia have lower negative premiums, ranging from 9% to 12%. Being born in the Philippines and in Eastern Asia are associated with 16% to 19% reductions in wages respectively. Looking at the second and third equations, there is a lower return for women born in the U.S. and Europe, India, Oceania and Other Countries, Central Asia, Southern Asia, and the Middle East, Eastern Asia, and

Southeastern Asia than men. The difference for India between the female and male sample is over 10 percentage-points, at -23.9% and -12.3%, respectively. This gender pattern is reversed for immigrants from China and the Philippines.

The overall empirical pattern is that the regions of birth with the largest negative premiums across genders are India, Central Asia, Southern Asia, or the Middle East, the Philippines, and South Asia. Place of birth is highly significant in explaining the immigrant wage gap in Canada. Furthermore, in looking at the overall sample of both men and women, the gender binary variable indicates that women earn approximately 25% less than men.

The event of studying outside of Canada, the U.S., or Europe decreases immigrants' wages by approximately 10.9%, compared to those who studied within those regions. Interestingly, the effect is higher for women (at 15.7% less) than for men (at 7.4% less) – i.e. more than double in magnitude, indicating that women are more penalized for attaining education in a foreign country. Recalling that, with the exception of two particular regions, immigrants' entry effects for being born in regions outside of Canada are more negative for women than is the case for men. Furthermore, immigrants who were born in Europe and the U.S. had the smallest disadvantage at entry, other than those born in Oceania and Other Countries. Thus, the finding that the return to studying outside of Canada, the U.S., and Europe has a higher disadvantage for women than for men is reasonable.

The effects of work experience and years of schooling are highly significant in explaining the wage gap. As the level of experience increases by one year, wages will increase at 1.26% each year. The coefficient for the interaction of immigrant status and work experience has a value of -0.82%, meaning that immigrants' work experience will have a return of 0.44% (1.26%-0.82%). This implies that wages will increase with experience at a lower rate for immigrants than

for Canadian-born citizens.

This regression equation included a number of demographic variables such as marital status. Individuals who are married earn 13.6% more than unmarried ones. This effect is significantly higher for men, at 22.2%, than for women, at 5.7%. The effect of being a visible minority reduces wages by 3.0% for women and by 10.4% for men.

The provincial fixed effects yield the expected results, which are statistically significant and economically significant. All of the regional indicators show that individuals would earn less than in Ontario except for Alberta. In Alberta, individuals would make approximately 8.1% more per week. This premium is very low for women at 3.5% but higher for men at 11.5%. Surprisingly, the CMA fixed effects did not validate the proposition that individuals in Toronto would earn more than those in Vancouver and Montreal.

The results of an alternative specification of the regressions are presented in Table 6, which includes two interactions of immigrant status and work experience, one with Canadian work experience and another one with foreign work experience (but which excludes the interaction of immigrant status and total work experience, as in Table 5). These interaction terms are interesting because there are differences in work experience gained across countries, and therefore the return to work experience may be different. We are able to discern the difference between the return for an immigrant's work in Canada and the return to their work experience abroad. In fact, many studies attribute foreign work experience to explain a significant portion of the wage gap between immigrants and the Canadian-born (Grenier and Nadeau, 2011; Green and Worswick, 2010).

The results of this specification are similar to those of Table 5. However, the inclusion of these added experience variables changes the effects of other variables. The years since

migration variable in Table 5 increased earnings by 0.95% per year; however, in Table 6, it only increases earnings by 0.64% per year- an attenuation of almost one-third. Furthermore, the coefficients for the place of birth changed in their magnitude, as there is a 1 percentage-point to 3 percentage-point decrease for each. The place of birth dummy variables show that the negative entry effect of immigrants based on where they are born is lower when their foreign vs. Canadian work experience is considered. Specifically, in the first column, relative to the comparable column (1) in Table 5, the largest change in the estimates is that the entry effect of being born in Eastern Asia was 2.9 percentage-points lower in magnitude. Furthermore, the entry effect for men from Eastern Asia is 3.9 percentage-points lower in magnitude, i.e. relative to the specification which does not account for foreign work experience and Canadian work experience. Otherwise, the patterns seen in Table 5 with respect to different coefficients for women and men are still present. The coefficients for studying outside of Canada, the U.S., or Europe, total work experience, years of schooling, visible minority status, gender status, the province fixed effects, and city fixed effects do not significantly change.

As mentioned, the regression specifications in Table 6 are unique because they examine the effect of foreign experience and Canadian experience separately for immigrants. As expected, immigrants will receive a smaller return to schooling than Canadian-born citizens, regardless of the source country of that schooling. While the return to work experience for Canadian-born citizens who have studied in Canada is 1.26% per year, the return to Canadian experience for immigrants is 0.77% per year. Furthermore, the return to foreign experience for immigrants is an economically small 0.19% per year. Immigrant women have a smaller disadvantage relative to immigrant men with to respect either their Canadian experience or their foreign experience, which is consistent with the findings in existing literature suggesting that

women have higher returns to human capital than men (Fortin, Lemieux and Torres, 2016; Boudarbat, Lemieux and Riddell, 2010).

Table 6: Regression results for log(*WEEKLYWAGES*), with immigrants' experience being divided between Canadian Work Experience and Foreign Work Experience, OLS technique

	(1) Both genders	(2) Females	(3) Males
Immigrant*Years Since Migration	0.0064***	0.0067***	0.0058***
	(0.0005)	(0.0007)	(0.0007)
Immigrant*Studied Outside of Canada, the U.S., or Europe	-0.1081***	-0.1566***	-0.0730***
	(0.0072)	(0.0103)	(0.0101)
*Immigrant*Region of Birth*			
U.S. and Europe	-0.0701***	-0.0900***	-0.0442***
	(0.0101)	(0.1481)	(0.0137)
Other Countries in the American Continents	-0.1051***	-0.1098***	-0.1024***
	(0.0132)	(0.0183)	(0.0188)
India	-0.1601***	-0.2203***	-0.0964***
	(0.0145)	(0.0209)	(0.0201)
China	-0.0868***	-0.0718***	-0.0816***
	(0.0129)	(0.0181)	(0.0181)
Philippines	-0.1375***	-0.1248***	-0.1652***
	(0.0144)	(0.0199)	(0.0204)
Central Asia, Southern Asia, and the Middle East	-0.1850***	-0.1894***	-0.1537***
	(0.0141)	(0.0215)	(0.0187)
Eastern Asia	-0.1636***	-0.1668***	-0.1468***
	(0.0228)	(0.0308)	(0.0329)
Southeastern Asia	-0.0863***	-0.0946***	-0.0660***
	(0.0173)	(0.0265)	(0.0228)
African Countries	-0.0895***	-0.0932***	-0.0593***
	(0.0143)	(0.0220)	(0.0190)
Oceania and Other Countries	-0.0583	-0.0821	-0.0388
	(0.0308)	(0.0437)	(0.0417)
Work Experience	0.0126***	0.0143***	0.0109***
	(0.0001)	(0.0002)	(0.0007)
Immigrant*Canadian Work Experience	-0.0049***	-0.0045***	-0.0052***
	(0.0006)	(0.0008)	(0.0008)

Immigrant*Foreign Work Experience	-0.0107***	-0.0096***	-0.0117***
	(0.0005)	(0.0008)	(0.0007)
Years of Schooling	0.1072***	0.1360***	0.0852***
	(0.0008)	(0.0012)	(0.0010)
Visible Minority	-0.0701***	-0.0303***	-0.1039***
	(0.0067)	(0.0095)	(0.0093)
Marital Status	0.1358***	0.0570***	0.2218***
	(0.0026)	(0.0036)	(0.0038)
Gender	-0.2523***	-	-
	(0.0024)		
Provinces			
British Columbia	-0.1044***	-0.1243***	-0.0890***
	(0.0058)	(0.0091)	(0.0075)
Alberta	0.0810***	0.0349***	0.1153***
	(0.0043)	(0.0063)	(0.0058)
Prairies	-0.1056***	-0.0970***	-0.1909***
	(0.0052)	(0.0075)	(0.0072)
Quebec	-0.1788***	-0. 0.1853***	-0.1675***
	(0.0037)	(9.9965)	(0.0051)
Atlantic	-0.1904***	-0.1869***	-0.1909***
	(0.0049)	(0.0065)	(0.0072)
CMAs			
Vancouver	0.0907***	0.1140***	0.0733***
	(0.0074)	(0.0113)	(0.0097)
Montreal	0.0662***	0.0787***	0.0537***
	(0.0045)	(0.0064)	(0.0061)
Year: 2010	0.0125***	0.0332***	-0.0084
	(0.0024)	(0.0034)	(0.0033)
Constant	5.0647***	4.3861***	5.3760***
	(0.0119)	(0.0189)	(0.0153)
R-Squared	0.1931	0.1863	0.1564
Observations	271,096	127,536	143,560

Notes: Robust standard errors are in brackets. OLS regression results are weighted. The sample includes individuals 20 to 64 years with education levels above a high school degree and earn above $500 but less than $250,000 per year in the 2006 Canadian Census and the 2011 National Household Survey. The reference person is unmarried, Canadian-born citizens, living in Ontario in the Toronto CMA.
* significant at 10% level, ** significant at 5% level, *** significant at 1% level. All tests are two-tailed.

The results of the regression equations of my econometric model are mostly economically and statistically significant. However, the results must be interpreted with caution, and one must keep in mind the possibility of endogeneity problems in this model, due to measurement errors and omitted variables. Measurement error may occur in my regression equations because of inaccurate survey responses by respondents and how the variables were defined. Age and the year of immigrants' arrival to Canada are measured within the same datasets by two methods: measuring the single year and collapsing the data. To address this issue, I created continuous variables by taking midpoints; however, this will obviously lead to results that are not totally precise. Additionally, I use Mincer's potential experience definition to calculate total experience, which assumes that schooling is continuous, that individuals begin work immediately after concluding their studies, and then work without significant gaps. Furthermore, the recoding of the data uses imputation methods that will create measurement error. The bias may be small given that we can assume that the measurement error of the reported data may be small relative to the variability of the data. There is also a potential endogeneity problem in this model due to the omitted variable bias. There are many variables present in the error term that have a major effect on the dependent variable including ability, such as motivation, talent, and perseverance.

6 Robustness Checks

Among the numerous papers that study assimilation rates for immigrants in Canada, most papers use econometric human capital models that share many of the same elements as the ones that I have employed. Human capital models have been used for decades, as has the incorporation of years since migration for immigrants as an important factor in the human capital

model. My model incorporates location of study and region of birth into the standard model. Many papers check for the robustness of their models by changing specifications and examining if the coefficients of the variables are sensitive to the choice of controls. However, only changing the control variables in my model will not be conducive in making conclusions. I include three additional specifications for which I use different methods to check for robustness. I do not use weights in the first specification. In my second specification, I ease a sampling restriction by not excluding respondents who are not full-year workers. In my third specification, I change the age restriction of my sample to include individuals without an upper age bound.

I will focus my robustness analysis on the sample that combines men and women and on the estimated coefficients of my main explanatory variables that are related to immigration: the binary variable indicating if the respondent studied outside of Canada, the U.S., or Europe; the set of place of birth binary variables, and the years since migration variable.

Table 7: Robustness Checks for log(WEEKLYWAGES)

Variable	(1) Main specification	(2) No weights	(3) All workers	(4) No upper bound age
Immigrant*Years Since Migration	0.0095***	0.0093***	0.0104***	0.0095***
	(0.0003)	(0.0002)	(0.0002)	(0.0003)
Immigrant*Studied Outside of Canada, the U.S., or Europe	-0.1089***	-0.1076***	-0.1179***	-0.1064***
	(0.0072)	(0.0068)	(0.0064)	(0.0072)
*Immigrant*Region of Birth*				
U.S. and Europe	-0.0954***	-0.0952***	-0.1056***	-0.0942***
	(0.0094)	(0.0089)	(0.0083)	(0.0094)
Other Countries in the American Continents	-0.1279***	-0.1255***	-0.1346***	-0.1222***
	(0.0128)	(0.0118)	(0.0111)	(0.0128)
India	-0.1826***	-0.1812***	-0.1996***	-0.1802***
	(0.0142)	(0.0133)	(0.0123)	(0.0142)
China	-0.1115***	-0.1122***	-0.1518***	-0.1046***
	(0.0124)	(0.0115)	(0.0110)	(0.0124)

Philippines	-0.1643***	-0.1631***	-0.1317***	-0.1573***
	(0.0138)	(0.0125)	(0.0120)	(0.0138)
Central Asia, Southern Asia, and the Middle East	-0.2104***	-0.2075***	-0.2325***	-0.2063***
	(0.0135)	(0.0126)	(0.0114)	(0.0135)
Eastern Asia	-0.1924***	-0.2010***	-0.2268***	-0.1847***
	(0.0224)	(0.0221)	(0.0194)	(0.0223)
Southeastern Asia	-0.1115***	-0.1140***	-0.1192***	-0.1085***
	(0.0169)	(0.0159)	(0.0151)	(0.0169)
African Countries	-0.1139***	-0.1184***	-0.1281***	-0.1091***
	(0.0139)	(0.0131)	(0.0121)	(0.0138)
Oceania and Other Countries	-0.0811*	-0.0826*	-0.0579	-0.0843*
	(0.0395)	(0.0302)	(0.0263)	(0.0308)
Work Experience	0.0126***	0.0126***	0.0135***	0.0112***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Immigrant*Work Experience	-0.0082***	-0.0079***	-0.0083***	-0.0082***
	(0.0003)	(0.0003)	(0.0003)	(0.0004)
Years of Schooling	0.1072***	0.1065***	0.1036***	0.1055***
	(0.0008)	(0.0007)	(0.0006)	(0.0008)
Visible Minority	-0.0700***	-0.0722***	-0.0689***	-0.0742***
	(0.0067)	(0.0062)	(0.0059)	(0.0067)
Marital Status	0.1360***	0.1346***	0.1541***	0.1418***
	(0.0026)	(0.0024)	(0.0024)	(0.0026)
Gender	-0.2521***	-0.2505***	-0.2472***	-0.2479***
	(0.0024)	(0.0022)	(0.0021)	(0.0024)
Provinces				
British Columbia	-0.1042***	-0.1055***	-0.0948***	-0.1040***
	(0.0058)	(0.0053)	(0.0053)	(0.0059)
Alberta	0.0811***	0.0819***	0.0974***	0.0793***
	(0.0043)	(0.0040)	(0.0040)	(0.0043)
Prairies	-0.1056***	-0.1075***	-0.0968***	-0.1049***
	(0.0052)	(0.0048)	(0.0048)	(0.0052)
Quebec	-0.1787***	-0.1807***	-0.15791***	-0.1751***
	(0.0037)	(0.0034)	(0.0033)	(0.0037)
Atlantic	-0.1904***	-0.1915***	-0.1963***	-0.1886***
	(0.0049)	(0.0044)	(0.0047)	(0.0049)
CMAs				
Vancouver	0.0903***	0.0908***	0.0860***	0.0892***
	(0.0074)	(0.0068)	(0.0068)	(0.0075)
Montreal	0.0664***	0.0662***	0.0629***	0.0639***
	(0.0045)	(0.0042)	(0.0039)	(0.0044)

Year: 2010	0.0127***	0.0211***	2.1789***	0.0115***
	(0.0024)	(0.0022)	(0.0022)	(0.0024)
Constant	5.0645***	5.0739***	5.0704***	5.1079***
	(0.0112)	(0.0113)	(0.0109)	(0.0120)
R-Squared	0.1929	0.1945	0.7691	0.1830
Observations	271,096	271,096	375,826	273,912

Notes: Robust standard errors are in brackets for columns (1), (2), (3), (4). OLS regression results are weighted. The sample includes individuals with education levels above a high school degree and earn above $500 but less than $250,000 per year in the 2006 Canadian Census and the 2011 National Household Survey. The reference person is unmarried, Canadian-born citizens, living in Ontario in the Toronto CMA. * significant at 10% level, ** significant at 5% level, *** significant at 1% level. All tests are two-tailed.

The results are shown in Table 7. Column (1) reproduces the results from the main specification of this paper (column (1) of Table 5). Column (2) presents the results of an unweighted regression. This was done to examine if there would be a major change in results. The weighted and unweighted specifications feature only minor and inconsequential differences. Specifically, there is less than a 1 percentage-point difference in the return to having studied outside Canada, the U.S., or Europe as well as for the entry effect of immigrants who were born in any region outside of Canada. This specification indicates that the estimated results for the main variables of interest are robust to the weighting scheme. The public-use data is a weighted sample; however, if this study used the master-file data then a different set of weights would be used. In column (3) the sample is no longer restricted to full-year workers – i.e. individuals that work at least 49 weeks in a year. Most of the current literature features just full-time workers and not full-year workers (as in Boudarbat, Lemieux and Riddell, 2010). The results of this regression are different from the original specification. The coefficient on the interaction term of immigrant status and Philippines as the place of birth is 13.7%; whereas, in the original regression, it is 16.4%. This is an economically significant change as the 3 percentage-point change in weekly wage will lead to an accumulated effect of a larger divergence over time. Finally, column (4) presents a sample with no upper bound age restriction. The results are almost

identical to the original regression.

The results presented for the main variables of interest in my model show that those listed in the coefficient estimates are similar, given the imposed specifications, with the exception of column (3). This divergence can be attributed to the fact that the specification in column (3) uses a different sample. Thus, the coefficient estimates are seemingly reliable.

7 Conclusion

This paper has investigated the effects of location of study, place of birth, and Canadian versus foreign experience on the weekly wages of immigrants to Canada. I found that immigrants a have positive assimilation pattern – i.e. they are converging to the earnings of Canadian-born citizens over time. Additionally, location of study and place of birth had statistically and economically significant impacts on the wage differentials between immigrants and Canadian-born citizens.

There is an approximately 10% wage penalty attributed to studying outside of Canada, the U.S., or Europe for immigrants. This impacts women twice as much as it impacts men – 15% versus 7%, respectively. As was shown in the existing current literature, negative premiums are most strongly received by those who were born in Asian countries. Individuals born in Central Asia, Southern Asia, and the Middle East have the largest negative effect at 21%, followed by those born in Eastern Asia at 19%, and followed by those born in India at 18%. Comparing these effects between women and men, unlike the effect of location of study, women have a smaller negative place of birth premium than men for many regions. Furthermore, immigrant women, relative to immigrant men, have a smaller disadvantage with respect to either Canadian experience of foreign experience; however, immigrant work experience in Canada or outside of

Canada has a smaller return than Canadian-born citizens' experience. In conclusion, the results presented for the variables of interest were expected and significant; however, there may be endogeneity and measurement errors problems.

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Appendix

Table A1: List of Groupings for *Place of Birth* fixed effects

Region	Countries
Western Central Asia and the Middle East	Afghanistan, Armenia, Azerbaijan, Bahrain, Cyprus, Georgia, Iran, Iraq, Israel, Jordan, Kazakhstan, Kuwait, Kyrgyzstan, Lebanon, Oman, Qatar, Saudi Arabia, Syria, Tajikistan, Turkey, Turkmenistan, United Arab Emirates, Uzbekistan, West Bank and Gaza Strip (Palestine), Yemen
South Asia	Bangladesh, Bhutan, India, Nepal, Pakistan, Sri Lanka
Central America	Belize, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama
South America	Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, French Guiana, Guyana Paraguay, Peru, Suriname, Uruguay, Venezuela
African Countries	Benin, Burkina Faso, Cape Verde, Cote d'Ivoire, Ghana, Gambia, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, Togo, Burundi, Comoros, Djibouti, Eritrea, Ethiopia, Kenya, Madagascar, Malawi, Mauritius, Mozambique, Reunion, Rwanda, Seychelles, Somalia, Tanzania, Uganda, Zambia, Zimbabwe, Algeria, Egypt, Libya, Morocco, Sudan, Tunisia, Angola, Cameroon, Central African Republic, Chad, Congo, The Democratic Republic of the, Congo, Republic of the, Equatorial Guinea, Gabon, Botswana, Lesotho, Namibia, South Africa, Republic of, Swaziland
Eastern Asia	China, Hong Kong Special Administrative Region, Japan, North Korea, South Kora, Macao Special Administrative Region, Mongolia, Taiwan
Southeastern Asia	Brunei Darussalam, Burma (Myanmar), Cambodia, Indonesia, Laos, Malaysia, Philippines, Singapore, Thailand, Viet Name
Europe	Austria, Belgium, France, Germany, Luxembourg, Monaco, Netherlands, Switzerland, Belarus, Bulgaria, Czech Republic Estonia, Hungary, Latvia, Lithuania Moldova, Poland, Romania, Russian Federation, Slovakia, Ukraine, Denmark, Faroe Islands Finland, Guernsey, Iceland, Ireland, Republic of Isle of Man, Jersey, Norway, Sweden, United Kingdom, Albania, Bosnia and Herzegovina, Croatia, Gibraltar, Greece, Italy, Kosovo, Macedonia, Republic of, Malta, Montenegro, Portugal, Serbia, Slovenia, Spain
Oceania and Others	Australia, Fiji, French Polynesia, New Caledonia, Papua New Guinea, Samoa, Tonga, American Samoa; Christmas Island; Cocos (Keeling) Islands; Cook Islands; Guam; Kiribati; Marshall Islands; Micronesia, Federated States of; Nauru; Niue; Norfolk Island; Northern Mariana Islands; Palau; Pitcairn; Solomon Islands; Tokelau; Tuvalu; United States Minor Outlying Islands; Vanuatu; and Wallis and Futuna
Other Caribbean and Bermuda	Anguilla, Antigua and Barbuda, Aruba, Bahamas, Bermuda, Cuba, Curacao, Dominica, Dominican Republic, Grenada, Guadeloupe, Haiti, Martinique, Montserrat, Puerto Rico, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Sint Maarten, Trinidad and Tobago, Turks and Caicos Islands, Virgin Islands